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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,819	11/16/2001	Vincent Detalle	11330-1	7650

25319 7590 03/22/2004

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EXAMINER

TURNER, SAMUEL A

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,819

Applicant(s)

DETALLE ET AL.

Examiner

Samuel A. Turner

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-57 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 26-57 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11.16.01, 7.4.03.</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The substitute specification filed 15 April has been approved by the examiner.

The preliminary amendment filed 21 February 2003 has been entered. Claims 1-25 have been canceled while claims 26-57 remain in the application

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 26-28, 31, 32, 36-39, 41, 43-46, 49, 51, and 53-57 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Borisov et al (Spectrochimica acta).

Borisov et al teach the effects of crater development during laser ablation coupled with mass spectrometry. A plurality of repetitive laser ablations pulses are

used to create a crater in a surface under inspection, see page 1698, an inductively coupled plasma mass spectrometer(ICP-MS) is used to sample the plasma after each laser pulse, page 1695, and a white light interferometer is used to measure the diameter, depth and volume of the crater, see page 1694, the interferometer used measures an area of $500 \times 500 \mu\text{m}^2$. The samples were places on an XYZ translation stage and the laser ablation beam spot was adjusted by adjusting the relative distance between the laser optics and the sample.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 29, 30, 33-35, and 48 rejected under 35 U.S.C. 103(a) as being unpatentable over Borisov et al(Spectrochimica acta). Borisov fails to specifically

teach the generation of more than one crater, a differential white light interferometer, or a scanning interferometer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to produce a profile of the entire sample by producing a plurality of craters at different locations on the sample by the use of the XYZ translation stage. This would have been a mere matter of duplicating the same disclosed test.

Claims 40 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borisov et al (Spectrochimica acta) as applied to claims 29, 30, 33-35, and 48 above, and further in view of Gong et al (6,643,027).

Gong teaches a differential white light interferometer for measuring the step height between different points on a surface. See figure 4.

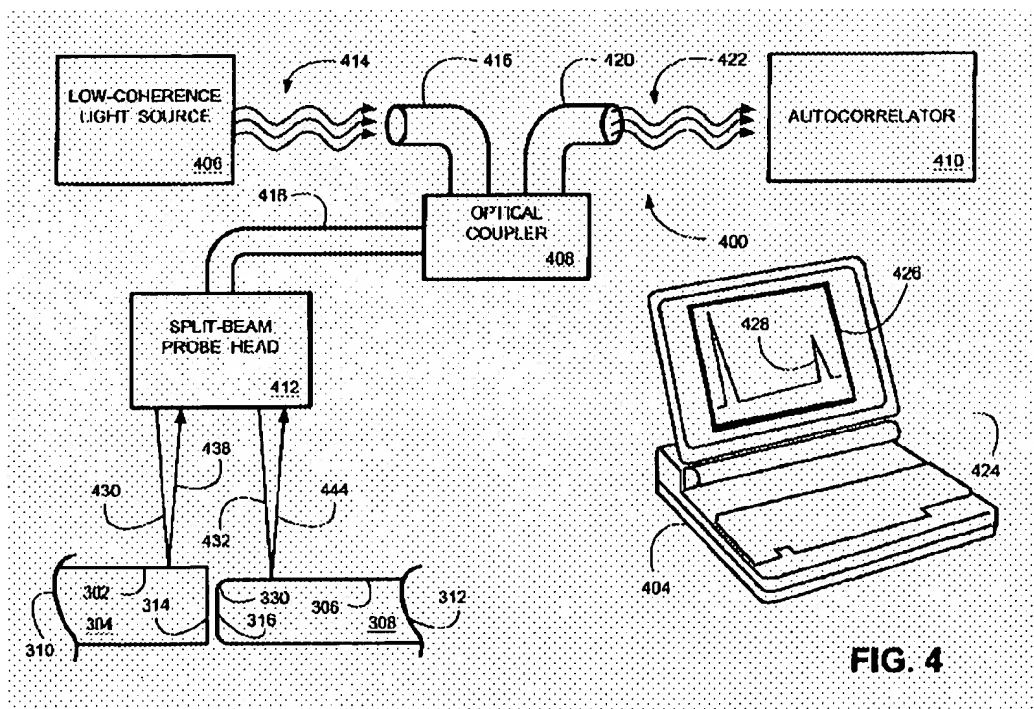
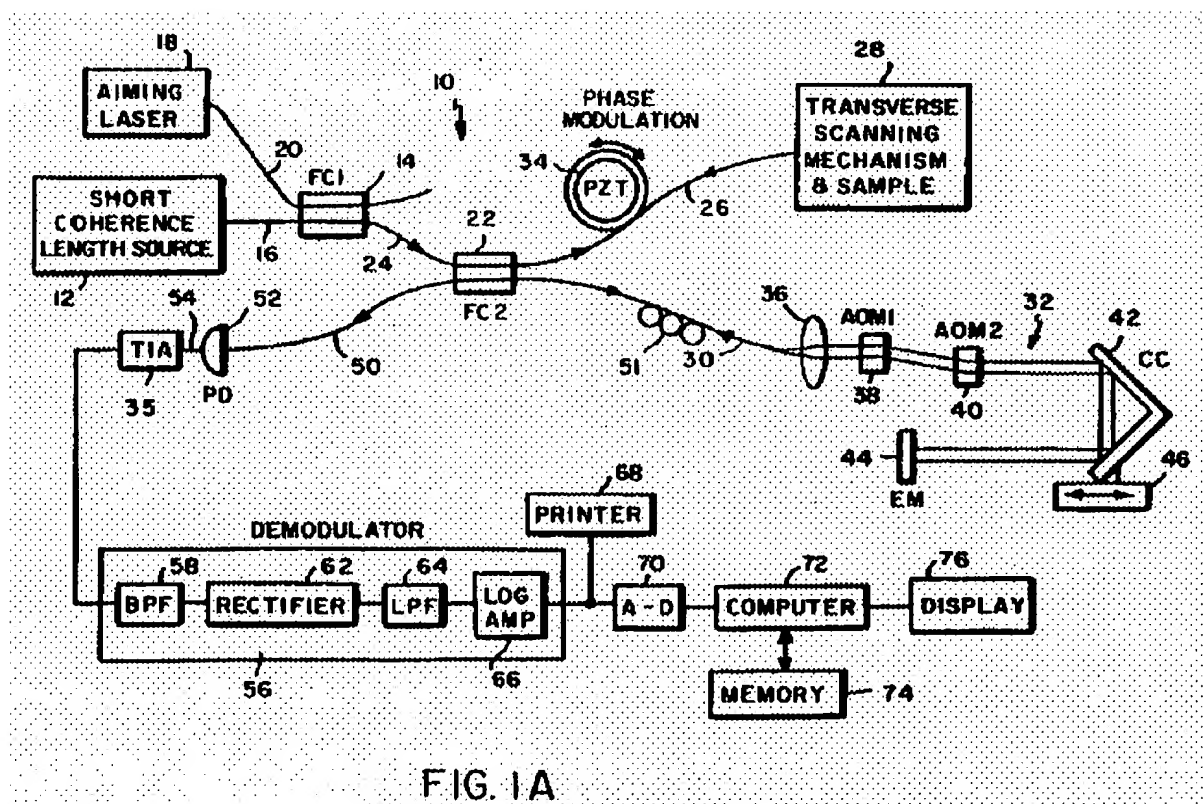


FIG. 4

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the interferometer of Borisov with the differential interferometer of Gong so that the depth of the crater in relationship to the surface of the sample may be more accurately measured.

Claim 42, 48, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borisov et al(Spectrochimica acta) in view of Swanson et al(5,321,501).

Swanson et al teach the use of a scanning mechanism(28) in a point-by-point white light interferometer. See figure 1A.



With regard to claim 48 it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the white light interferometer of Borisov with a scanning interferometer such that a point-by-point measurement can be taken at only the desired locations and reducing the cost by using a single detector instead of the detector array of Borisov.

With regard to claims 42 and 52, the light from the white light interferometer is usually normal to the surface of the test sample, this is to simplify the mathematics involved in the depth calculations. It would have been obvious to one of ordinary skill in the art at the time the invention was made to illuminate the crater at any known angle, which is not blocked by the crater rim and use the basic equation $A^2+B^2=C^2$ where C is the beam path at the chosen angle and A is the actual depth to be measured.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is **571-272-2432**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached on **571-272-2415**.

The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is **571-272-1562**.

Any other inquiry of a technical nature, and all inquiries of a general nature or any patent term adjustment should be directed to TC2800 Customer Service Office whose telephone number is **571-272-1585**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see **<http://pair-direct.uspto.gov>**. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).



Samuel A. Turner
Primary Examiner
Art Unit 2877